

2040 Vision

Industry pathway to
Net Zero and beyond



Liquid Gas UK

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Foreword >

Matthew Hickin, Chair of Liquid Gas UK

I am delighted to share with you our 2040 vision for Liquid Gas UK which demonstrates how our industry can contribute to Net Zero. For more than 80 years, LPG has been a key part of the UK energy mix and going forward we believe that LPG and bioLPG can support UK and Devolved Government's commitments to decarbonise across a variety of sectors.

While LPG already offers significant reductions in carbon and particulate emissions, bioLPG is the future for our sector. Already available on the market today, bioLPG is a 'drop-in' fuel allowing homes, businesses and industry to reduce their carbon footprint without expensive changes to heating systems.

Liquid Gas UK and its membership are committed to working with policy makers to develop a long term supportive policy framework to achieve Net Zero and address barriers hindering decarbonisation.

Barriers such as EPCs, which encourage off-grid homeowners to install higher carbon heating at a time when Government is trying to encourage the opposite.

It's also important that UK and Devolved Government bring everyone along on the decarbonisation journey and provide them with secure, reliable energy. We must support those in fuel poverty, develop new skills and contribute towards economic growth.

Lastly, the transition to Net Zero is, exactly that, a transition. Innovation takes time, but there are steps that we can all take today to make a difference. LPG is already being used in city centres across the UK to improve toxic air quality through taxi retrofit, and could be used by more local authorities to tackle the dirty air we breathe in every day.

Matthew Hickin

The LPG industry aims to transition to bioLPG by 2040.

2040 Vision >

The LPG industry is a key part of the energy mix today and is determined to play an even larger role in 2040.

The bioLPG pathway, as part of a mixed technology approach to decarbonisation, can support UK Government and Devolved Administrations to achieve climate change targets in an affordable and non-intrusive way.

For this reason, the LPG industry **aims to transition to bioLPG by 2040.**

About Liquid Gas UK >

Liquid Gas UK is the trade association representing companies that operate in the LPG and bioLPG industry in the UK. Members include LPG and bioLPG producers, distributors, equipment manufacturers and service providers.

Member companies supply over 99% of the total LPG and 100% of bioLPG distributed in the UK market place.

Liquid Gas UK takes a leading role in liaising and consulting with UK Government and Devolved Administrations to shape policy with respect to the decarbonisation of heat, transport and industry.

The association also takes a leading role in safety and this is why Liquid Gas UK is a global trailblazer for Codes of Practice, setting high standards for the safe, progressive development and use of LPG and bioLPG.

LPG emits 33% less CO₂ than coal and 12% less than oil

About LPG >

As a key component of the UK's energy mix, LPG is a popular choice for heating homes and businesses, and fuelling industrial processes, in areas not connected to the gas grid. As **LPG is the lowest carbon conventional fuel source available to homes and businesses off the grid**, the fuel provides an immediate, expedient and cost-effective energy solution.

What is LPG?

LPG is the term used for Liquefied Petroleum Gas which refers to two gases, propane (C₃H₈) and butane (C₄H₁₀), which occur naturally and are easily converted to liquid form through the application of moderate pressure.

1 European Commission, No 601/2012 of June 2012 concerning the monitoring and reporting of greenhouse gas emissions. Available at: www.eur-lex.europa.eu
2 WLPGA, Charter of Benefits (2017)

Why use LPG?

- Low carbon:** Emits 33% less CO₂ than coal and 12% less than oil.¹
- Clean:** A clean-burning, smoke-free fuel which emits very low levels of NO_x, SO_x and Particulate Matter (PM).²
- Secure supply:** LPG has multiple sources, and because it's easily transportable, it offers a secure, widely available energy source for properties off the gas grid.
- Versatile:** LPG has a vast number of applications and can be used practically anywhere. This flexibility and portability allows LPG to reach places that other energies cannot.
- High efficiency:** Gases inherently offer high efficiency which supports optimised performance in the newest boilers and hybrid technologies.
- Supports economic growth:** LPG powers and supports UK agriculture, tourism and industry based off the gas grid.
- Bio ready:** As bioLPG is a 'drop-in' fuel, LPG infrastructure is ready for the future. This means no retrofit costs and low consumer disruption.

A Future Based On BioLPG >

Industry is committed to supporting the UK Government and Devolved Administrations in meeting climate change targets outlined in the Paris Agreement and Clean Growth Strategy. While LPG is already a lower carbon energy source, industry is proactively taking emissions reduction even further with the introduction of bioLPG, also known as biopropane.

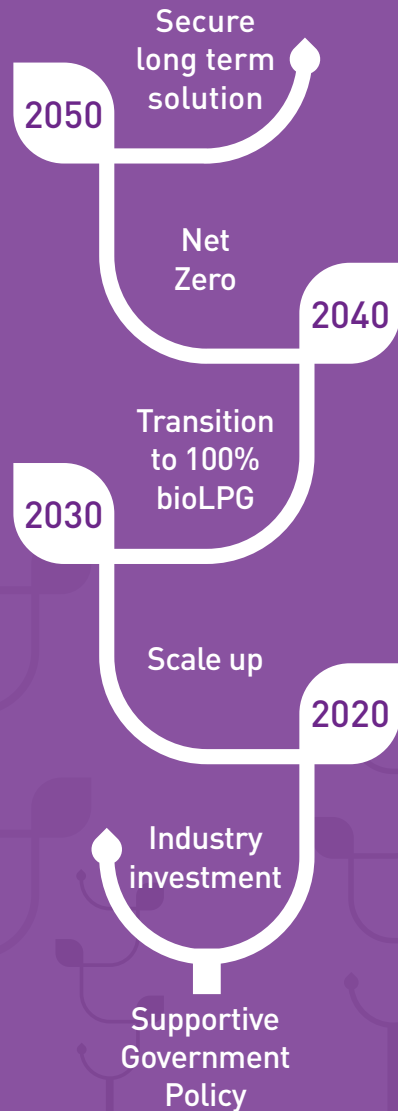
BioLPG is a key part of the solution

BioLPG is an **affordable, convenient and non-intrusive 'drop-in' solution** to decarbonisation for a variety of rural off-grid homes and businesses.

- Renewable:** Made from a diverse mix of biological feedstocks and processes.
- Low Carbon:** Up to 90% carbon emissions reduction and carries the same low NOx, SOx and PM as conventional LPG.³
- Boilers are Bio ready:** As bioLPG is a 'drop-in' fuel, LPG infrastructure is ready for the future. This means no retrofit costs and low consumer disruption.
- Instant Heat:** Immediate and expedient heat or hot water.

BioLPG offers up to 90% carbon emissions reduction and carries the same low NOx, SOx and PM

³ WLPGA, BioLPG: The Renewable Future (2018), page 52



Already available on the market place today, bioLPG is chemically indistinct from LPG and can be 'dropped-in' to existing equipment and appliances, an easy switch for people to make.

It can also be blended with fossil LPG which enables a phased, secure transition to 100% bioLPG. This sets it apart from other biofuel solutions, which cannot be blended with their conventional counterparts and require new infrastructure.

How do you get it?

There are several ways to make bioLPG using different technologies and a variety of thermal or chemical processes.

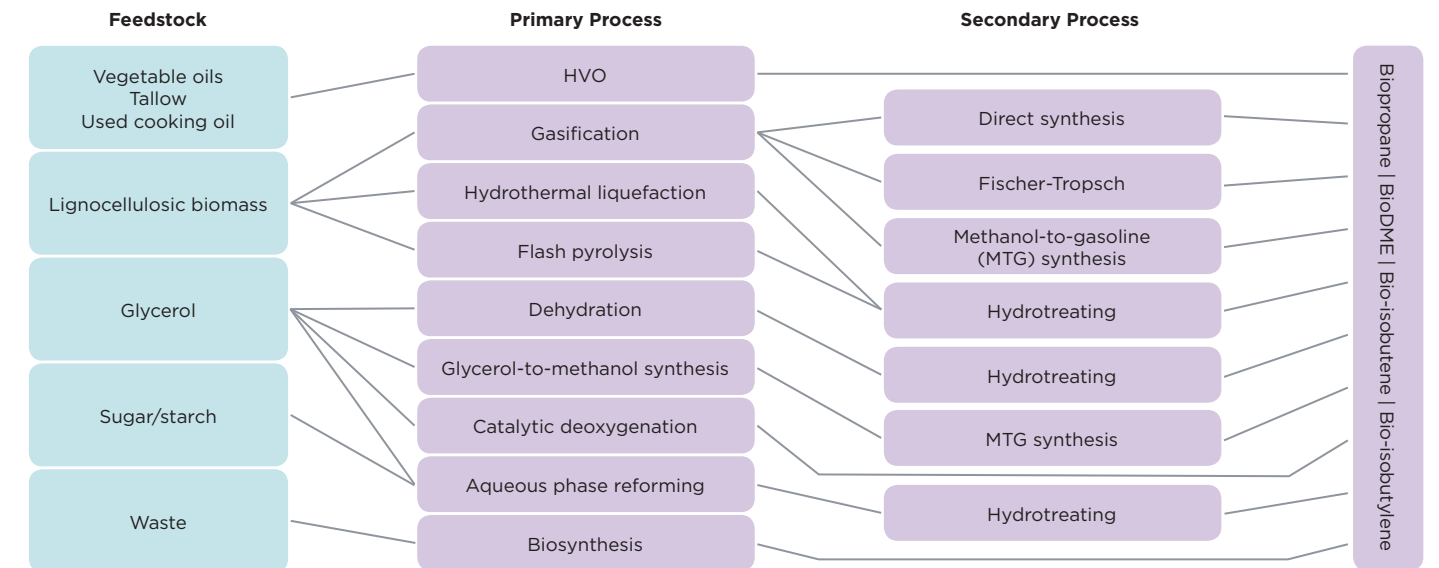
Whilst bioLPG production is the primary aim of some of these processes, for others bioLPG is a co-product alongside other bioenergies.

Liquid Gas UK members are actively exploring and investing in a range of different

production methods, including both imported and localised UK production.

For example, in 2018 a Liquid Gas UK member company began importing bioLPG into the UK from Neste's Rotterdam refinery which is now available on the market.

In addition, a member has also partnered with SkyNRG to develop bioLPG as a co-product of sustainable aviation fuel.



Off-Grid Heat Decarbonisation >

There are at least 2 million rural off-grid homes in the UK which are largely heated by fossil fuels, such as heating oil and coal, that the Clean Growth Strategy explicitly aims to phase out.

LPG and bioLPG offer a long-term solution to the decarbonisation of these rural off-grid homes, amongst a mix of technologies that will enable the drastic reduction of heat emissions in rural areas.

Reducing emissions from rural homes and businesses

Many rural off-grid properties are considered both hard-to-heat and difficult-to-treat. It is well known that their age, style and fabric make most energy efficiency improvements impractical and expensive.

Unless undergoing a major refurbishment, many of these properties do not lend themselves to being retrofitted affordably for electrified heating solutions. It is these homes and businesses where LPG and bioLPG can make a huge difference in the transition to Net Zero, by providing clean, affordable and secure high-grade heat.

Following the announcement of the 'Future Homes Standard', LPG and bioLPG could also complement hybrid heat pump technology installed in new builds off the gas grid. Whilst still an uncertain technology, gas based hybrids offer more security than sole heat pump solutions for newer rural homes.

Policy makers must acknowledge that **different solutions will be required for different types of buildings** across the UK.

A 'one size fits all' approach will not **work** for off-grid buildings, nor the family or business that operates within them.



Liquid Gas UK calls on UK Government and Devolved Administrations to set a long term policy framework that supports a consumer-led market approach to off-grid heat decarbonisation.

This will enable a mix of environmentally progressive and innovative solutions for off-grid homes and businesses, and ensure that UK citizens are able to make low carbon, sustainable choices that work for them, irrespective of their socio-economic status.

EPCs: Holding Back Rural Emissions Reduction >

Energy Performance Certificates (EPCs) are currently more likely to encourage off-grid property owners to take up higher carbon heating solutions rather than invest in energy efficiency measures. This **unintended consequence** is the exact opposite of what UK Government & Devolved Administrations want to see.




Why does this happen?

The EPC rating is positioned as a measure of energy efficiency, in reality however, the rating is actually a measure of energy cost per m².

Including input fuel cost in the methodology is especially distorting when comparing various fuel types between similar properties and is a particular problem for off-gas grid properties where all fuel options are more expensive than natural gas.

This means that an identical property built to the exact same standards will receive a much lower EPC rating if it happens to be situated outside the coverage of mains gas.

So what does this actually mean?

-  Off-grid homeowners are unfairly penalised, as they will have to **spend more money** on building improvements to reach the same energy performance standard as those on the grid.
-  **Homeowners are incentivised to switch to higher carbon, cheaper fuels** in order to meet the Minimum Energy Efficiency Standard (MEES) for the Private Rented Sector, rather than invest in genuine energy efficiency measures.
-  Potential **damage to the off-grid rental market** and increases in rent for families to cover the costs.

Case Study

Typical off-grid property (Norfolk)

Property features; Sandstone/limestone as built (no insulation), pitched roof (250mm loft insulation in part), full secondary glazing, boiler and radiator – heating controls, programmer, thermostat and TRVs. Low energy lighting in all outlets.

The below table demonstrates the different EPC ratings for this property when changing only the fuel type and heating system:

Heating System	Current Rating
Mains gas boiler	60 (D)
LPG boiler	28 (F)
Oil boiler	47 (E)
Electric boiler	18 (G)
Electric high retention storage heater	42 (E)

An easy solution

UK Government and Devolved Administrations have explicitly referenced using EPCs as the mechanism by which improvements in energy efficiency and performance standards will be driven and measured.

If policy makers want to see real improvements in energy efficiency in off-grid homes and not unjustly penalise rural communities, then the methodology has to be addressed.

Liquid Gas UK calls on policy makers to remove the fuel cost element from the EPC methodology.

Tackling Air Quality >

LPG is already being used today to help reduce emissions from some of the most polluting vehicles on our roads, as well as improve toxic levels of air quality. It's perfectly placed to support city centres while other solutions find their feet.

LPG can help to reduce pollution immediately as **one diesel vehicle emits the same quantities of NOx as over 20 LPG vehicles**, and PM emissions from LPG vehicles on an urban cycle are so low that they are below reliably measurable levels.⁴

How LPG and bioLPG can support clean air measures:

- Instantly improve air quality through taxi LPG retrofit, a more affordable solution for taxi drivers.
- Local authorities can encourage the private hire sector to switch to cleaner fuels, such as LPG, by changing licensing criteria.
- Vehicle manufacturers can solve 'range anxiety' for customers by using an LPG range extender – especially commercial vehicles and trucks that need to travel longer distances.



⁴ Liquid Gas Europe, An LPG Industry Roadmap (2013), page 8

Cities back LPG

Birmingham

2017: Birmingham City Council's Cleaner Cabs project to retrofit 65 taxis onto LPG wins award at National Air Quality Awards.

2019: City Council announce £5m Hackney Carriage support package, with **£5,000 grants for approved CVRAS solutions, such as LPG.**

London

2018: The Mayor of London and TfL unveil a package of measures to reduce air pollution in central London, including a **£2.5m fund to convert Euro 5 taxis to LPG.**

2019: TfL announce extension of funding to **£5m.**

A 'Just Transition' >

It's vitally important that the transition to a decarbonised future is a 'just' one. Though the transition is necessary, it should not penalise individuals, nor leave behind the most poor or vulnerable.

A 'Just Transition' should:

- 🔥 Provide **energy security**
- 🔥 Support those in **fuel poverty**
- 🔥 Develop **new skills** and employment

Energy Security



Multiple production methods and supply routes ensure LPG and bioLPG security, supported by a well-established supply chain in the UK.

Liquid Gas UK members continue to invest in additional resilience measures, for example, one member is transforming the Avonmouth LNG site into a 35,000 tonne LPG storage terminal.

Support those in Fuel Poverty



Liquid Gas UK takes supporting the most vulnerable extremely seriously and established the Customer Charter, adhered to by all members, to demonstrate this.

The Charter covers areas such as seeking to ensure the elderly, chronically ill or registered disabled do not run out of energy in the unlikely event of restricted supply.

Develop new skills in the sector



The 'Just Transition' should result in meaningful opportunities for individuals to upskill and develop.

The transition to bioLPG, alongside market growth, provides a huge opportunity for **young and diverse entrants to enter the off-grid energy sector.**



Energy for all

Clean Secure Affordable

Conclusion >

Industry is committed to supporting the transition to Net Zero and supplying affordable, clean and secure energy for all. From family homes through to country pubs, distilleries to street food vendors, tech start-ups in barn conversions to our proud agricultural sector; LPG and bioLPG can support them all on their low carbon journey.

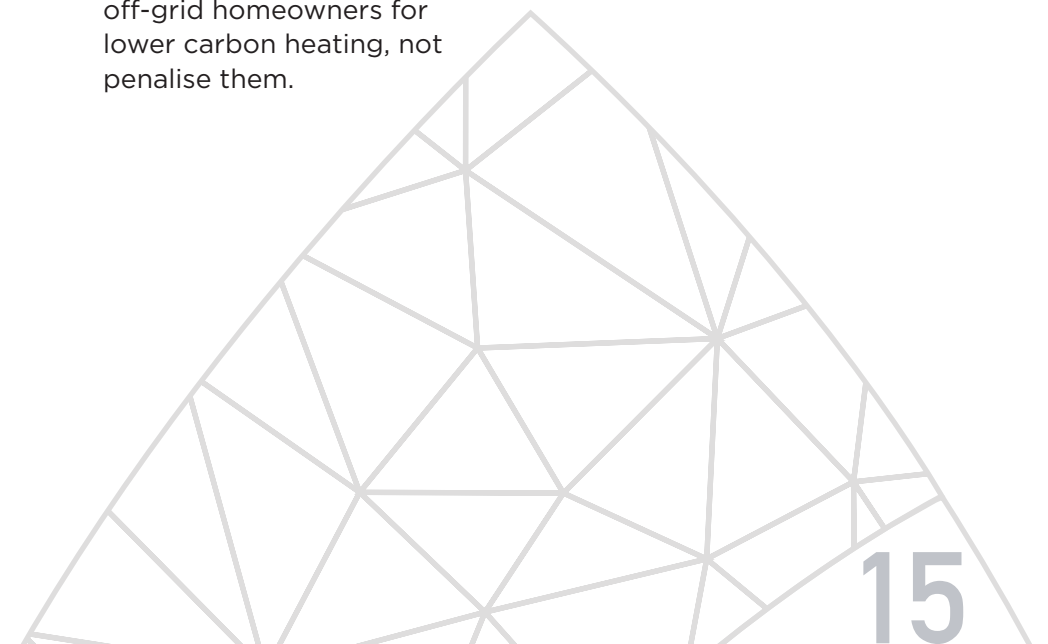
The 2040 Vision is a landmark step for the industry. The bioLPG pathway, as part of a mixed technology approach, can support UK and Devolved Government to achieve climate change targets in an affordable and non-intrusive way.

However, industry cannot do this alone. There needs to be collaboration and Liquid Gas UK welcomes the opportunity to engage with policy makers to enable effective decarbonisation across the entirety of the UK.

In order to achieve this, Liquid Gas UK calls on UK and Devolved Governments to:

- Set a long term policy framework that supports a **consumer-led market approach to off-grid heat decarbonisation**.
- Acknowledge that different solutions will be required for different types of buildings – a **'one size fits all' approach will not work**.
- Remove the fuel cost element from EPC methodology** and reward off-grid homeowners for lower carbon heating, not penalise them.

- Take steps today to improve air quality, by using today's technology: LPG can make a difference now, while other solutions find their feet.
- Ensure the journey to Net Zero is a 'Just Transition' and empowers all individuals to choose affordable, decarbonised solutions that work for them.





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